7.4.6 Control Pad Replacement

Replacement Part Number 622170

Included in Kit:	Tools Required:
Control pad	Phillips screwdriver (medium) Flat-blade screwdriver (small) Isopropyl alcohol Cleaning cloth

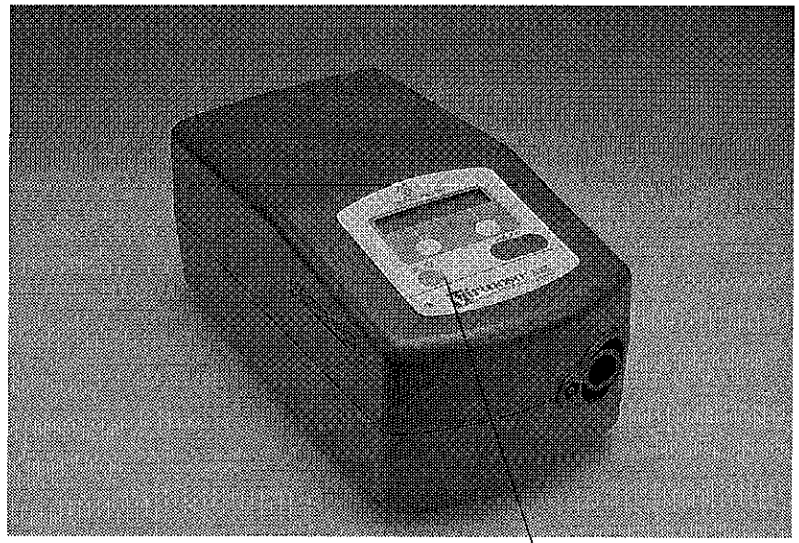
Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.4 for more detailed instructions.)
- Control pad

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.



Control Pad Replacement (Continued)

Step 1 Removing the Control Pad

a. Working from the inside of the top enclosure, place a flat-blade screwdriver onto the exposed portion of the control pad, next to the ribbon cable. Gently push until the control pad is partially lifted.

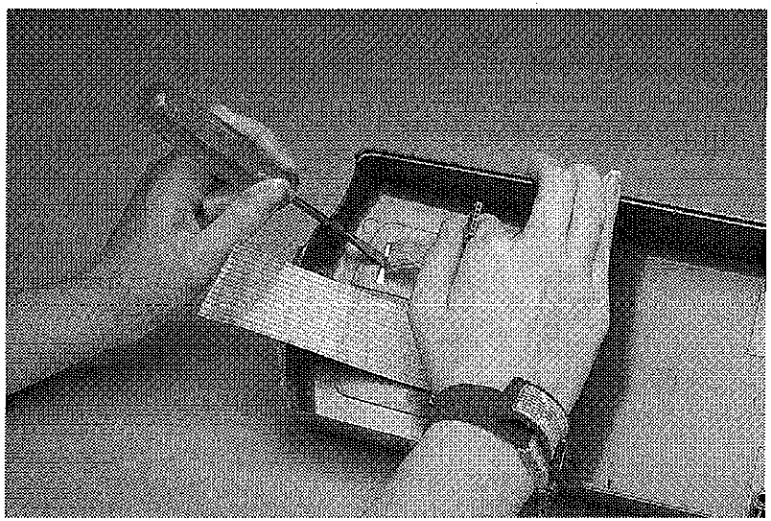


Figure 7-11
Pressing the Control Pad from the Top Enclosure

b. Working from the outside of the top enclosure, carefully lift upwards on the control pad and remove it from the top enclosure.

NOTE: A small amount of isopropyl alcohol may be used during the removal process.

c. As the control pad is being removed, the ribbon cable must be fed through the opening in the top enclosure.

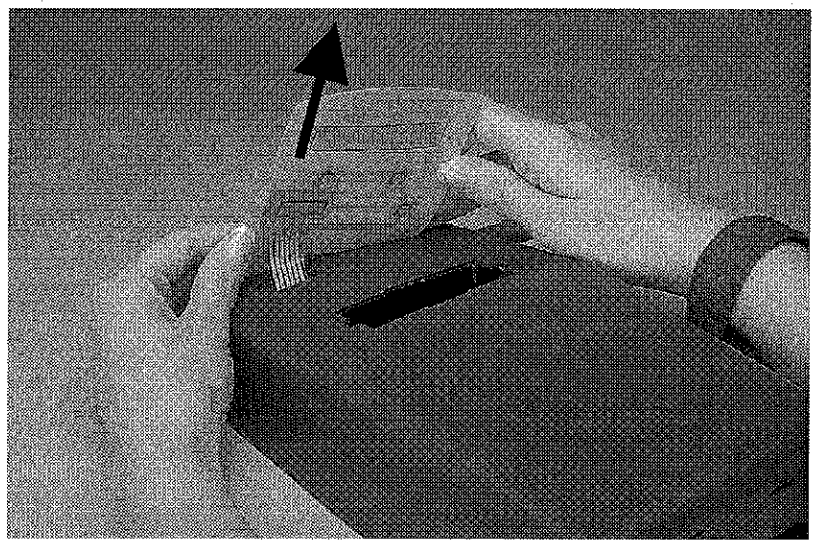


Figure 7-12
Removing the Control Pad

Control Pad Replacement (Continued)

d. Use a small amount of isopropyl alcohol on a cleaning cloth to remove any adhesive residue from the surface of the top enclosure.

Step 2 Installing the Control Pad

a. Remove the protective backing from the back of the control pad (make sure the backing under the ribbon cable is removed).

b. Feed the control pad ribbon cable through the opening in the top enclosure.

c. Starting with the front edge, align the control pad with the indentation in the top enclosure then set in place.

d. Using a rubbing motion, press the control pad firmly onto the top enclosure.

7.4.7 Main Printed Circuit Assembly (Main PCA) Replacement

CAUTION: Due to required testing after replacement, this item is only replaceable at a Respironics Service Center equipped with a Great Performers Calibration Station.

Replacement Part Number 622158

Included in Kit:	Tools Required:
Main PCA Pressure tubing (31") 6-13 × 3/8" screw (×3)	Phillips screwdriver (medium)

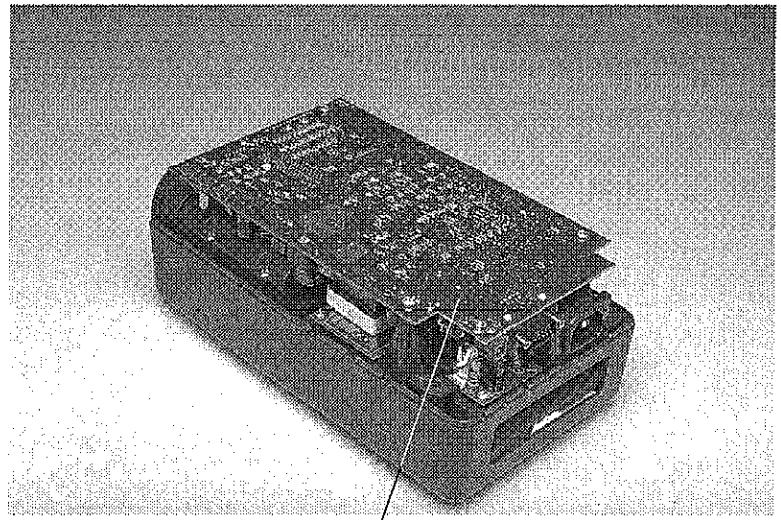
Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.4 for more detailed instructions
- Main PCA

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.



Main PCA Replacement (Continued)

Step 1 Removing the Main PCA

a. Using a Phillips screwdriver, remove the three screws securing the Main PCA to the standoffs on the enclosure insert.

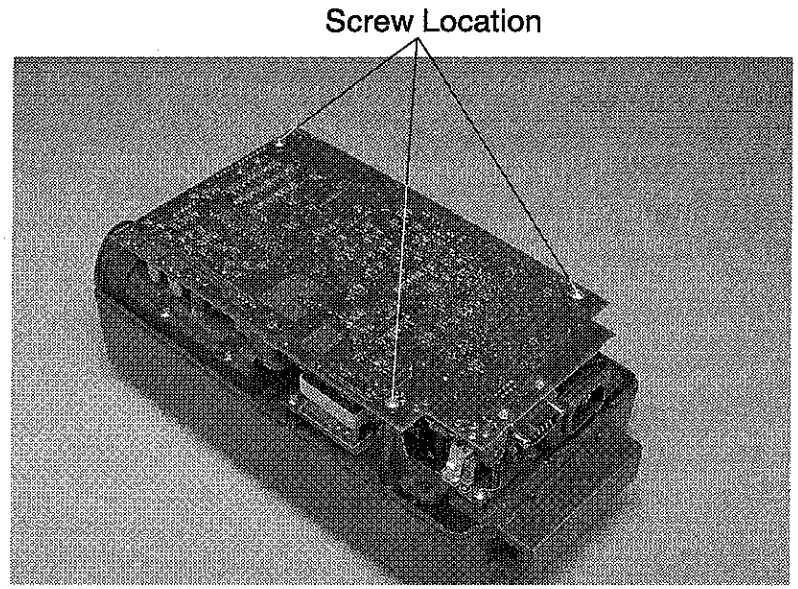


Figure 7-13
Location of the Three Screws Securing the Main PCA

b. Lift the Main PCA slightly to provide access to the pressure tubing, blower, and power supply connections.

c. Remove the blower wire connector from the (J6) location on the Main PCA by pulling it straight down from the receptacle.

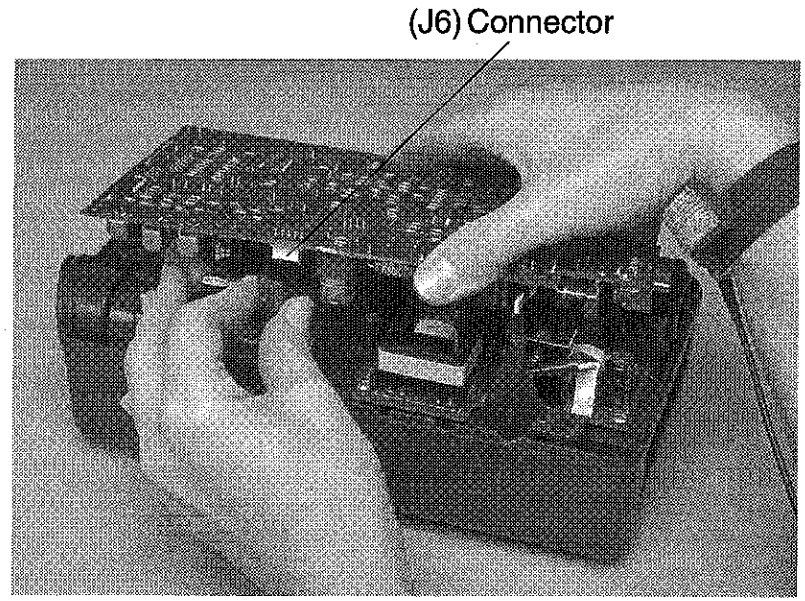


Figure 7-14
Removing the Blower Connector from the (J6) Location

Main PCA Replacement (Continued)

d. Remove the power supply connector from the (J2) location on the Power Supply Printed Circuit Assembly (Power Supply PCA) by pulling it straight up from the receptacle.

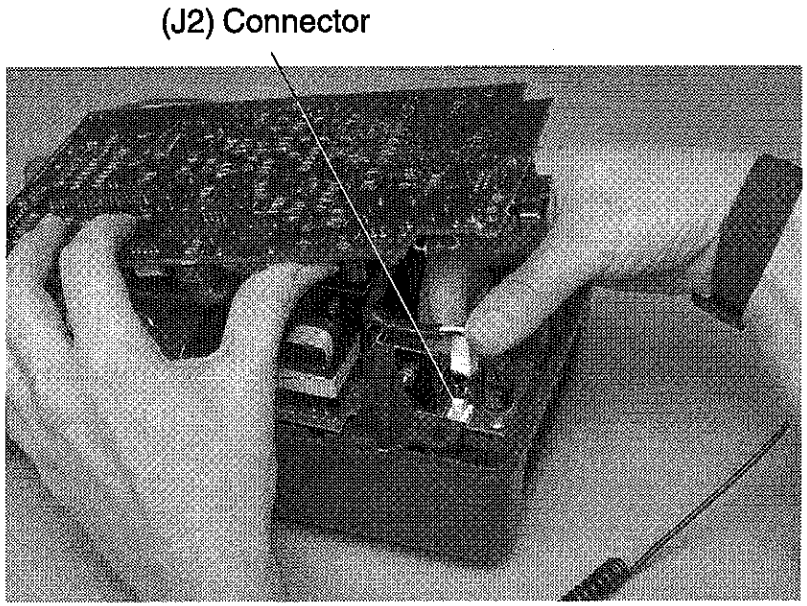


Figure 7-15
Removing the Power Supply Connector from the (J2) Location

e. Turn the Main PCA over to expose the pressure tubing connection. While securely holding MT1 in place to prevent damage, remove the pressure tubing from the MT1 port.

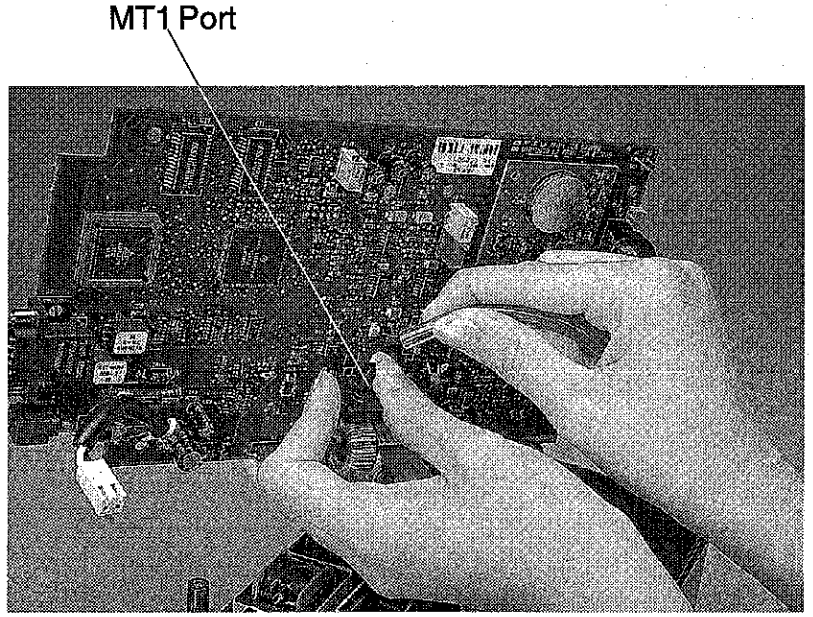


Figure 7-16
Removing the Pressure Tubing from MT1

Main PCA Replacement (Continued)

Step 2 Installing the Main PCA

a. Working from the bottom of the Main PCA, securely hold MT1 in place to prevent damage and install the pressure tubing on the fitting (make sure the tubing has 1 loop around the front standoff).

b. Turn the Main PCA over and hold it slightly above the unit.

c. Install the Main PCA power supply connector into the (J2) location on the Power Supply PCA by aligning it with the receptacle and gently pushing it into place.

NOTE: Cable routing is important. It should be routed between the standoff and under the heat sink screw. Make sure that the cable shielding does not contact the heat sink.

d. Install the blower connector on the (J6) location on the Main PCA by aligning it with the receptacle and gently pushing it into the receptacle.

NOTE: The blower connector has four pins. Its mating connector (J6) on the Main PCA has five pins. The blower connector uses pins 1 – 4 of (J6) and should be installed closest to the coil inductor.

e. Align the holes in the Main PCA with the holes in the enclosure insert standoffs.

NOTE: Make sure that the pressure tubing is not kinked by components on the PCAs.

f. Secure the Main PCA to the enclosure insert by installing and tightening the three screws provided.

7.4.8 Pressure Tubing Replacement

CAUTION: Due to required testing after replacement, this item is only replaceable at a Respironics Service Center equipped with a Great Performers Calibration Station.

Replacement Part Number 622171

Included in Kit:	Tools Required:
Pressure tubing (31")	Phillips screwdriver (medium)

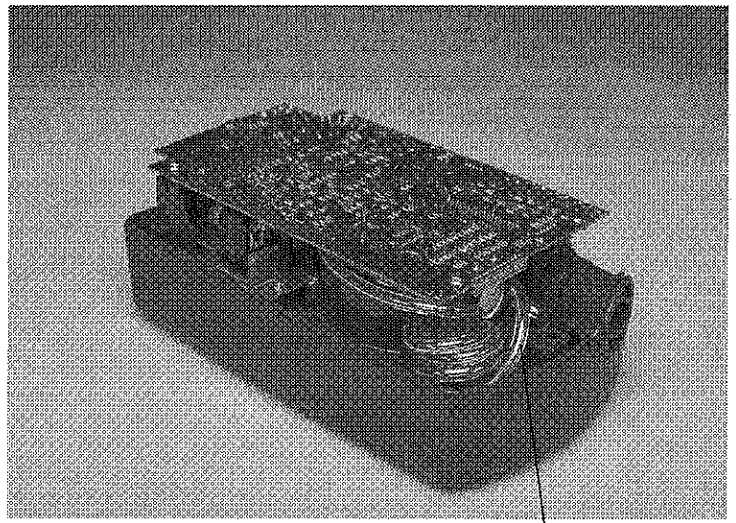
Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.7 for more detailed instructions.)
- Main PCA (partial)
- Pressure tubing

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.



Pressure Tubing Replacement (Continued)

Step 1 Removing the Main PCA (Partial)

NOTE: The pressure tubing can be removed from the Main PCA without disconnecting the blower and power supply connections. Care should be taken during the process not to damage the Main PCA, blower assembly, or power supply PCA.

Remove:
- three screws
- pressure tubing

(See Section 7.4.8 for more detailed instructions on removing the Main PCA.)

Step 2 Removing the Pressure Tubing

a. While holding the outlet port in place in the bottom enclosure, remove the pressure tubing from the outlet port.

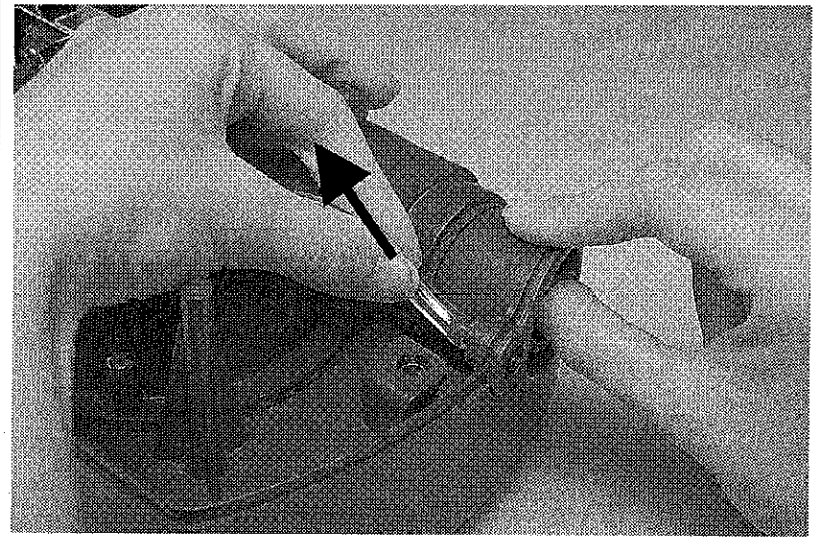


Figure 7-17
Removing the Pressure Tubing from the Outlet Port

Pressure Tubing Replacement (Continued)

Step 3 Installing the Pressure Tubing

a. Securely hold MT1 in place to prevent damage and install the pressure tubing onto the MT1 port.

b. While holding the outlet port in place in the bottom enclosure, install the pressure tubing on the outlet port fitting.

Step 4 Installing the Main PCA (Partial)

Install:
- pressure tubing with 1 loop around the front standoff
- three screws

(See Section 7.4.8 for more detailed instructions on installing the Main PCA.)

7.4.9 Outlet Port Replacement

CAUTION: Due to required testing after replacement, this item is only replaceable at a Respironics Service Center equipped with a Great Performers Calibration Station.

Replacement Part Number 622120

Included in Kit:	Tools Required:
Outlet port Pressure tubing (31") Pressure tubing (14" – not used for this repair)	Phillips screwdriver (medium)

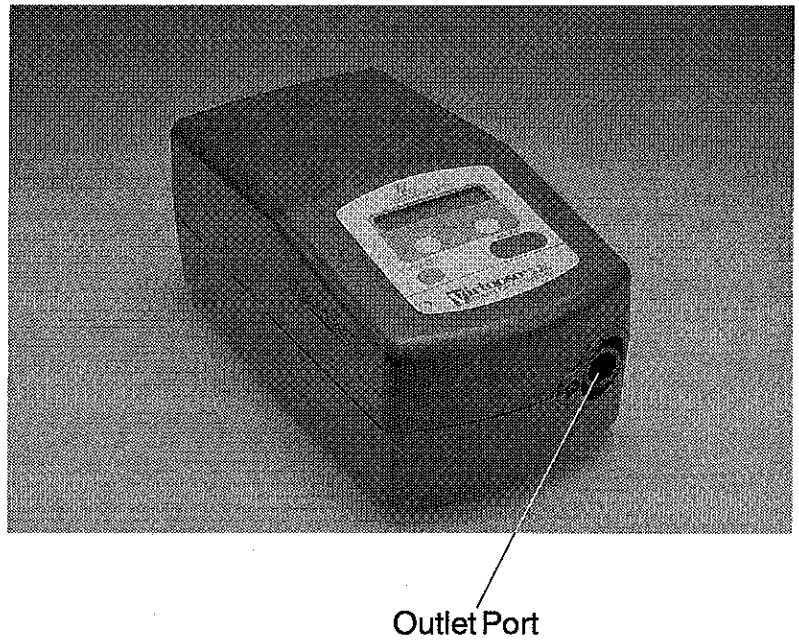
Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.4 for more detailed instructions.)
- Main PCA (See Section 7.4.7 for more detailed instructions.)
- Pressure tubing (31") (See Section 7.4.8 for more detailed instructions.)
- Outlet port

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.



Blower Assembly Replacement (Continued)

Step 1 Removing the Blower Assembly

a. Using a Phillips screwdriver, remove the six screws securing the blower assembly to the enclosure insert.

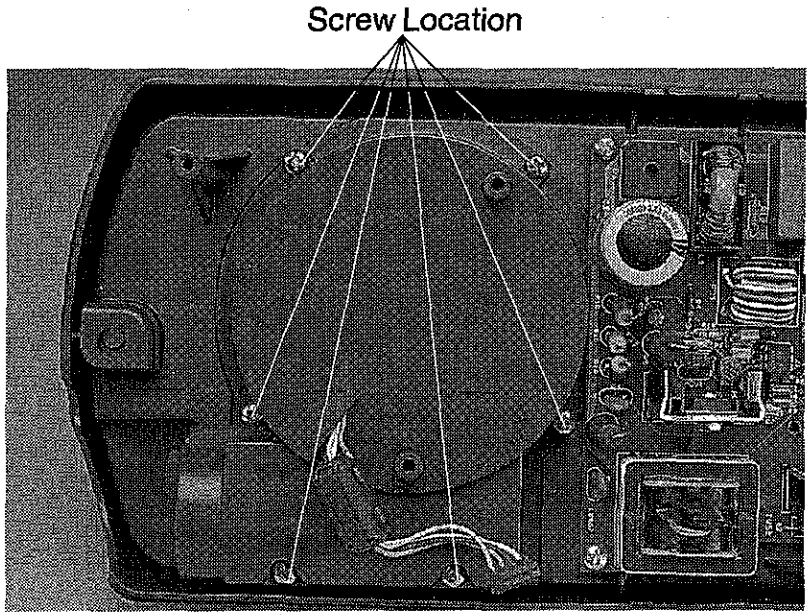


Figure 7-19
Location of the Blower Assembly Screws

b. While holding the enclosure insert in place, lift and remove the blower assembly.

NOTE: Some upward force on one of the edges may be necessary because the blower-to-enclosure insert seal will hold the two pieces together.

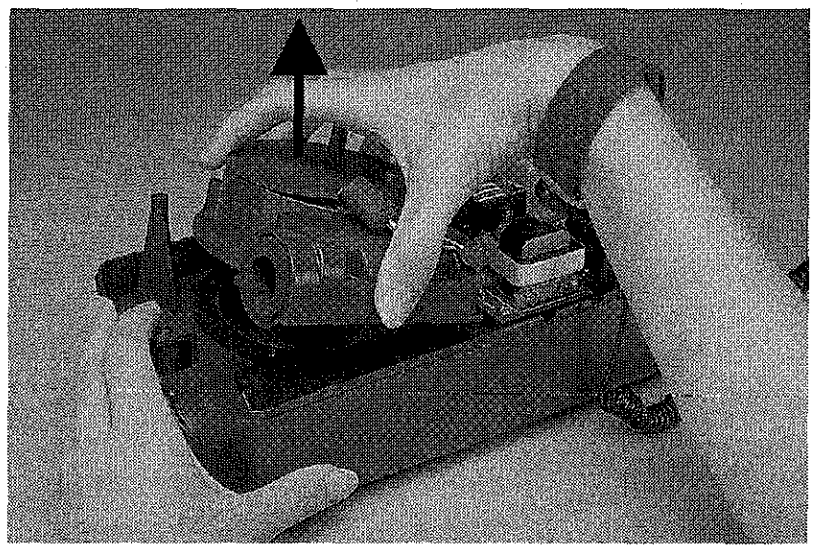


Figure 7-20
Removing the Blower Assembly

c. Remove the blower-to-enclosure insert seal.

Blower Assembly Replacement (Continued)

Step 2 Installing the Blower Assembly

a. Position the blower-to-enclosure insert seal in place on the enclosure insert.

b. Align the blower assembly with the holes in the enclosure insert, then set the blower assembly in place.

c. Insert and tighten the six screws provided to secure the blower assembly to the enclosure insert.

NOTE: The screws should be torqued to a maximum of 6 in-lbs. Excessive torque may cause the blower impeller to contact the enclosure insert.

7.4.11 Power Supply Printed Circuit Assembly (Power Supply PCA) Replacement

CAUTION: Due to required testing after replacement, this item is only replaceable at a Respironics Service Center equipped with a Great Performers Calibration Station.

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.

Replacement Part Number 622126* or 1001111*

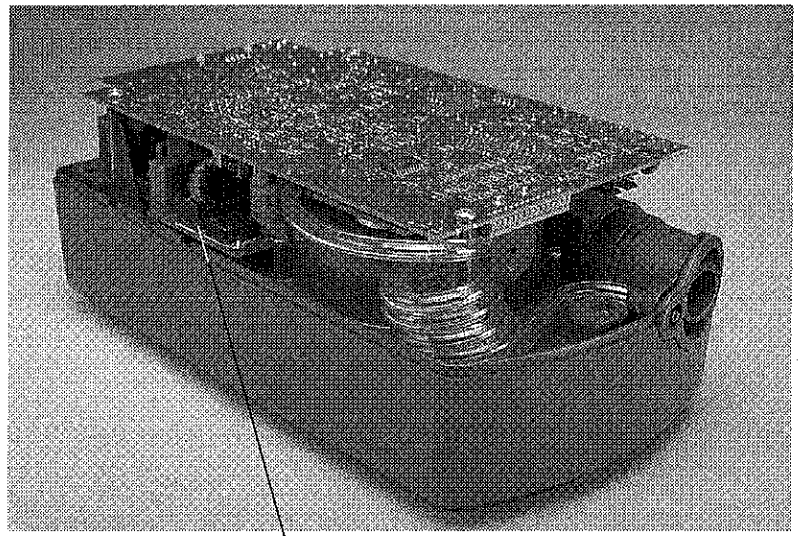
Included in Kit:	Tools Required:
Power supply PCA 6-13 x 1/4" screw (x4)	Phillips screwdriver (medium)

* See Note 4 on page 7-7

Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.4 for more detailed instructions.)
- Main PCA (See Section 7.4.7 for more detailed instructions.)
- Power supply PCA



Power Supply PCA Replacement (Continued)

Step 1 Removing the Power Supply PCA

a. Using a Phillips screwdriver, remove the four screws securing the power supply PCA to the enclosure insert.

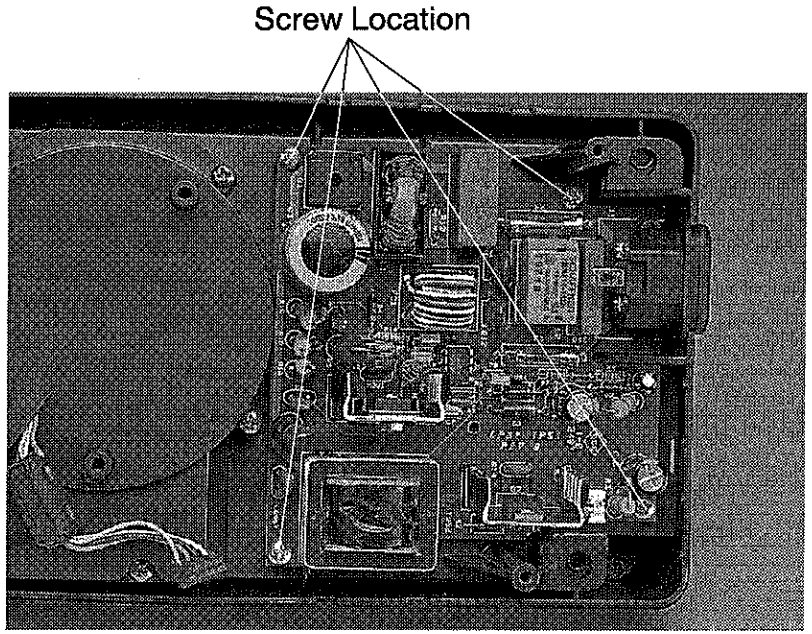


Figure 7-21
Location of the Power Supply PCA Screws

b. While holding the enclosure insert in place, lift the power supply PCA from the enclosure insert. It will be necessary to guide the AC input power receptacle from the cut-out in the enclosure insert.

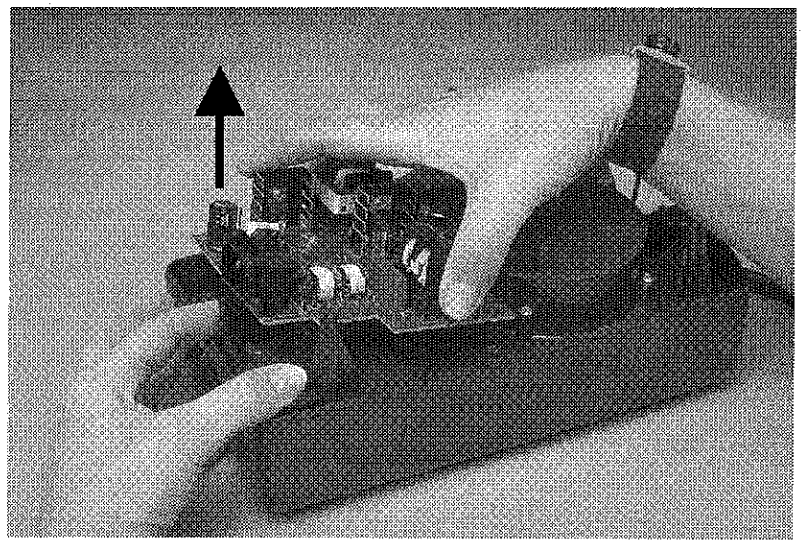


Figure 7-22
Removing the Power Supply PCA

Power Supply PCA Replacement (Continued)

Step 2 Installing the Power Supply PCA

a. Align the holes in the power supply PCA with the holes in the enclosure insert. Note that the AC power input receptacle must be guided into the cut-out in the enclosure insert.

b. Insert and tighten the four screws provided to secure the power supply PCA to the enclosure insert.

7.4.12 Enclosure Insert Replacement

CAUTION: Due to required testing after replacement, this item is only replaceable at a Respironics Service Center equipped with a Great Performers Calibration Station.

Replacement Part Number 622119

Included in Kit:	Tools Required:
Enclosure insert (w / foam baffle)	Phillips screwdriver (medium)
Blower-to-enclosure insert seal	Torque wrench (in-lbs.)

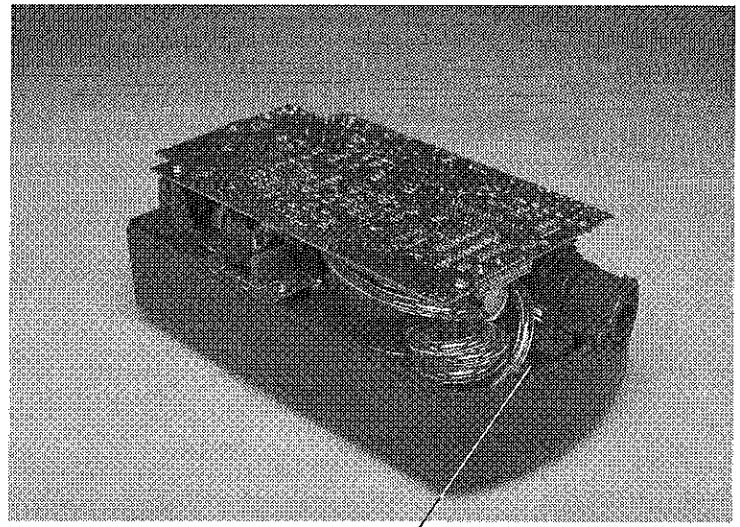
Procedure

Removed / Installed During Process:

- Top enclosure (See Section 7.4.4 for more detailed instructions.)
- Main PCA (See Section 7.4.7 for more detailed instructions.)
- Pressure tubing (See Section 7.4.8 for more detailed instructions.)
- Outlet port (See Section 7.4.9 for more detailed instructions.)
- Blower assembly (See Section 7.4.10 for more detailed instructions.)
- Power supply PCA (See Section 7.4.11 for more detailed instructions.)
- Enclosure insert

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the device.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Repairs made to this device must be performed only in an antistatic, ESD-protected environment.



Enclosure Insert Replacement (Continued)

Step 1 Removing the Enclosure Insert

a. While holding the bottom enclosure in place, lift the enclosure insert out of the bottom enclosure.

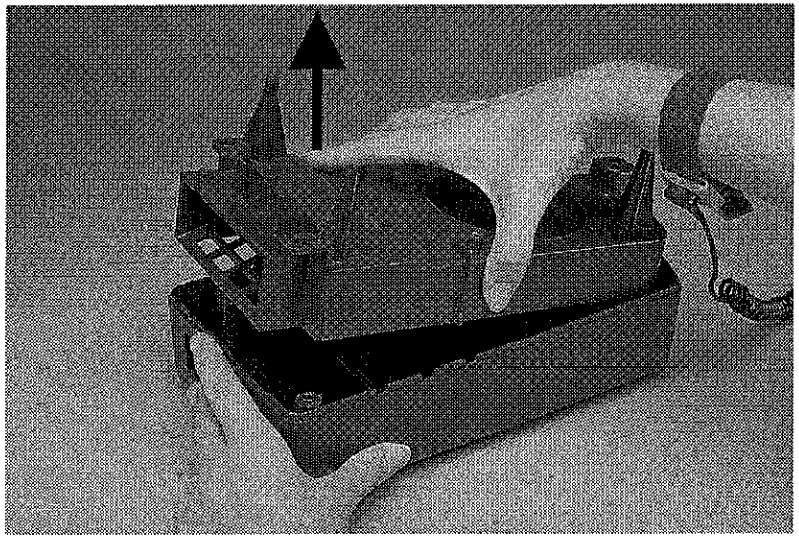


Figure 7-23
Removing the Enclosure Insert

Step 2 Installing the Enclosure Insert

a. Align the enclosure insert then place it into the bottom enclosure.

Chapter 8: Testing

8.1 Testing Process 8-3

8.2 User Interface Checkout Procedure 8-5

8.3 Virtuoso LX System Functional Test 8-7

8.4 Run-in Test 8-10

8.5 Post Testing Pressure Setup (includes putting the unit into "Deep Sleep" 8-11

8.6 Virtuoso LX System Functional Test Data Sheet 8-12

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Chapter 8: Testing

8.1 Testing Process

The following process should be followed after a repair has been done on the Virtuoso LX Smart CPAP System (Virtuoso LX).

Perform the following in order:

1. System Functional Test* (Section 8.4)
2. Run-in Test (Section 8.5)
3. System Functional Test* (Section 8.4)
4. Post Testing Setup (Section 8.6)

*The same data sheet is used, but a column is provided to indicate Pre Run-in or Post Run-in Data.

Only limited testing can be performed on the unit. For any major repairs, the System Final Test must be performed at a Respironics Service Center equipped with a Great Performers Calibration Station.

8.2 User Interface Checkout Procedure

NOTE: This is an operational test only. No specifications or data recording are required.

Step 1 Connect the test orifice (RI P/N 532232) to the outlet swivel and then to the outlet port. Connect the pressure tubing from the test orifice to the unit's pressure port.

Step 2 Plug the unit into an AC power source.

Step 3 The green Light-Emitting Diode (LED) should illuminate and the display should temporarily have the Respironics name and the software version displayed.

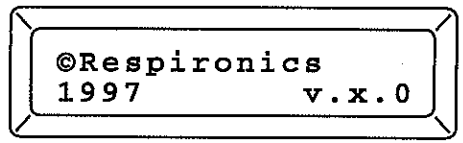

Figure 8-1
Respironics Screen

User Interface Checkout Procedure (Continued)

The display will then change to the Blower screen.

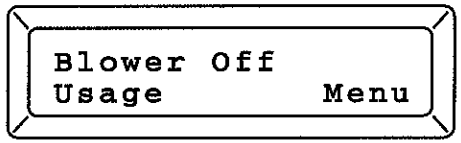

Figure 8-2
Blower Screen

Step 4 Using the left User button, select Usage and observe that the memory percentage, therapy hours, and blower hours are displayed.

Step 5 Using the right User button select Menu and observe that "Change Settings" is displayed. Press the right User button to select No.

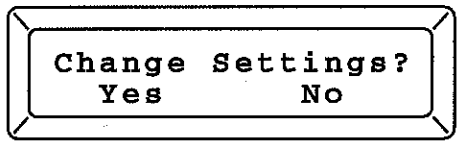

Figure 8-3
Change Settings Screen

Step 6 Press the Pressure On / Off button and verify that the blower activates.

Step 7 Press the Ramp button and verify that the Ramp feature activates.

NOTE: Ramp feature must be enabled and the pressure setting must be above the minimum pressure (4.0 cm H_2O) setting for the ramp feature to activate.

Step 8 Press the Pressure On / Off button to power down the blower.

Step 9 Disconnect the unit from the AC power source.

Step 10 Test complete.

8.3 Virtuoso LX System Functional Test

Purpose

This procedure provides functional testing of the Virtuoso LX. The System Functional Test will be used prior to and after the Run-in Test. Use the System Functional Test Data Sheet in Section 8.7 to record test results.

CAUTION: Electronic components used in this device are subject to damage from static electricity. Use and follow appropriate Electro-Static Discharge (ESD)-procedures.

NOTE: The Virtuoso LX System Functional Test only verifies the unit's operation in CPAP mode. The testing of the Auto-CPAP mode must be done at a Respironics Service Center equipped with the Great Performers Calibration Station.

Equipment

Digital Manometer (see Appendix A)

Regulated DC Power Supply or 12 V Battery* (see Appendix A)

Watt Meter (see Appendix A)

O_2 Enrichment Port (RI P/N 312010) (×2)

Whisper Swivel II (RI P/N 332113)

Port Cap (supplied with unit) or Stopper

9" Pressure Tubing (RI P/N 532101)

Test Orifice, 60 LPM @ 2.4 cm (RI P/N 532232)

Shielded DC Power Cord* (RI P/N 1001956)

Battery Cable Adaptor* (RI P/N 532209)

6 ft. Smooth-Bor Tubing (RI P/N 301016)

* Used for optional DC testing only.

Equipment Setup

- Place the O_2 enrichment port onto the outlet port of the unit.
- Place the test orifice onto the O_2 enrichment port.
- Connect the manometer to the test orifice using pressure tubing.
- Connect the 9" pressure tubing from the unit's pressure port to the O_2 enrichment port.
- Occlude the test orifice.
- Connect the AC power cord to the watt meter but do not connect to the unit at this time.

Virtuoso LX System Functional Test (Continued)

Procedure

Step 1 Minimum Pressure Test (3.0 cm H_2O)

a. While holding down the two User buttons on the keypad, plug the AC power cord into the unit. After two beeps are heard from the unit during power up, release the buttons.

NOTE: If a System Error 7 "key stuck" occurs, repeat the process in Step 1-a.

b. Verify the following:

- the software version is momentarily displayed on the Liquid Crystal Display (LCD);
- the "green" Light Emitting Diode (LED) is lit;
- the language displayed on the LCD is correct; and
- the unit is operating in the CPAP mode.

c. Press the left User button until the Pressure screen appears.

d. Press the right User button until "Pressure = 3" is visible.

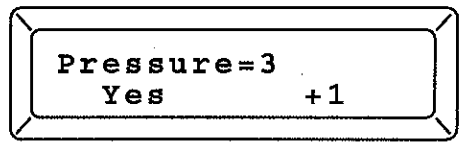

Figure 8-4
Pressure Screen

e. Advance through the User menus, pressing the left User button until the Altitude Setting appears. Select the proper altitude for testing purposes. Advance through the remaining User menus and exit the Therapy Setup menu.

f. Occlude the test orifice. Press the Pressure On / Off button and verify the pressure on the manometer is 2.5 cm H_2O to 3.5 cm H_2O.

g. Unocclude the test orifice. Verify the pressure reading on the manometer is 2.0 cm H_2O to 4.0 cm H_2O.

h. Turn the blower off. Remove the test orifice.

Virtuoso LX System Functional Test (Continued)

Step 2 Maximum Pressure Test (20 cm H_2O)

a. Connect the following:

- 6 ft. Smooth-Bor tubing to O_2 port #1.
- Whisper Swivel to the 6 ft. Smooth-Bor tubing.
- O_2 port #2 to the Whisper Swivel II.
- Manometer and pressure tubing to O_2 port #2.
- Occlude O_2 port #2.

b. Turn the unit blower off. Unplug the AC power cord from the unit. The green LED will go out.

c. While holding down the two User buttons on the keypad, plug the AC power cord into the unit. After two beeps are heard from the unit during power up, release the buttons. The same screen used for the Minimum Pressure Test should be visible.

NOTE: If a System Error 7 "key stuck" occurs, repeat the process in Step 2-a.

d. Press the left User button until the Pressure screen appears.

e. Press the right User button until "Pressure = 20" is visible. Press the left User button.

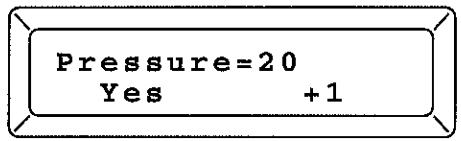

Figure 8-5
Pressure Screen

f. Press the right User button until "Ramp Time = 5" is visible. Press the left User button.

g. Press the right User button until "Min Ramp P. = 4" is visible. Press the left User button.

h. Advance through the remaining User menus and exit the Therapy Setup menu.

i. Press the Pressure On / Off button and verify the pressure on the manometer is 17 cm H_2O to 23 cm H_2O.

j. Verify the watt meter reading is less than or equal to 35 watts.

Virtuoso LX System Functional Test (Continued)

NOTE: If a new blower assembly was installed, the wattage may initially be higher. After approximately five minutes use, the wattage will reduce to within specifications.

k. Press the Ramp button and verify that the pressure drops below 5.0 cm H_2O. Pressure will increase in a linear fashion over the specified time period until the pressure setting is reached. Verify one increase in pressure change in ramp operation.

l. Turn the blower off.

m. Unplug the AC power cord from the unit.

Step 3 DC Operation (optional test)
This is an optional test that should be done if a repair was performed that affected the DC operation or if a problem is suspected in this area.

a. Connect the DC inlet plug to the unit.

b. Using the DC Battery Cable, connect to the Regulated DC Power Supply set to 11.5 VDC to 12.5 VDC or to the battery.

c. Turn the unit on. Verify proper functioning by observing a non-zero pressure reading on the manometer. Once observed, turn the unit off.

d. Disconnect the power supply or battery, then remove the DC inlet plug.

8.4 Run-in Test

Purpose

This procedure provides instructions for performing a run-in test for the Virtuoso LX. The unit will run for one hour at specified parameters to qualify the unit after servicing. Use the System Functional Test Data Sheet in Section 8.7 to record test results.

Equipment

9" Pressure Tubing (RI P/N 532101)

Test Orifice, 60 LPM @ 2.4 cm (RI P/N 532232)

Equipment Setup

- Place the test orifice onto the outlet port of the unit.
- Connect the 9" pressure tubing from the unit's pressure port to the test orifice.

Procedure

Step 1 While holding down the two User buttons, plug the AC power cord into the unit.

Step 2 Access the Settings menu and set the CPAP mode pressure to 20 cm H_2O. Exit Settings menu.

Step 3 Access the Usage menu.

Run-in Test (Continued)

Step 4 Record the initial blower hours (xxxxx.x hours).

Step 5 Ensure a filter(s) and filter cap are installed in the unit.

Step 6 Ensure that the test orifice is unoccluded.

Step 7 Turn the unit on by pressing the Pressure On / Off button.

Step 8 Run-in for a minimum of 1 hour.

Step 9 Turn the unit off by pressing the Pressure On / Off button.

Step 10 Access the Usage menu. Record the final blower hours (xxxxx.x hours). Verify that the blower usage increased by one hour or more from the initial reading in Step 4.

8.5 Post Testing Pressure Setup (Includes putting the unit into "Deep Sleep")

Step 1 While holding down the two User buttons on the keypad, plug the AC power cord into the unit.

NOTE: If a System Error 7 "key stuck" occurs, repeat the process in Step 1.

Step 2 Press the left User button until "Pressure = 20" is visible.

Step 3 Press the right User button until "Pressure = 10" is visible.

Step 4 Scroll through the User menus, pressing the left User button eight times. For more information about the screens being bypassed, see Section 4.2 - System Setup.

Step 5 Press the Pressure On / Off button and verify the pressure on the manometer is 8.5 cm H_2O to 11.5 cm H_2O).

Step 6 Use the System Functional Test Data Sheet in Section 8.7 to record test results.

8.6 Virtuoso LX System Functional Test Data Sheet

Service Notification _____

Serial No. _____ Model No. _____

System Functional Test (see Section 8.3)	Step		Actual		Pass	Fail
			Pre Run-in	Post Run-in		
Minimum Pressure (Occluded)	1.f	2.5 cm H_2O to 3.5 cm H_2O				
Minimum Pressure (Unoccluded)	1.g	2.0 cm H_2O to 4.0 cm H_2O				
Maximum Pressure	2.i	17.0 cm H_2O to 23.0 cm H_2O				
Wattage	2.j	$\leq$ 35 watts				
Ramp	2.k	Pressure drops below 5.0 cm H_2O and pressure increases				
DC Operation (optional)	3.c	Non-zero pressure reading				

Run-in Test (see Section 8.4)	Step	Specification	Actual	Pass	Fail
Initial Blower Hours	4	Record Hours (xxxxx.x)			
Final Blower Hours	10	At least one hour more than pre run-in blower hours			

Post Testing Pressure and Deep Sleep Setup (see Section 8.5)	Step	Specification	Actual	Pass	Fail
Post Testing Pressure Setup	5	8.5 cm H_2O to 11.5 cm H_2O			

Date _____ Tested by (signature) _____

Appendix A: Tools and Equipment

A.1 Service Tools and Supplies A-3

A.2 Acceptable Test Equipment A-4

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Appendix A: Tools and Equipment

CAUTION: Due to required calibration after parts replacement, the following may not be field replaced unless the unit is System Final Tested at a Respironics Service Center equipped with a Great Performers Calibration Station:

- Main Printed Circuit Assembly (PCA)
- Power Supply Printed Circuit Assembly (Power Supply PCA)
- Blower Assembly
- Enclosure Insert
- Outlet Port
- Pressure Tubing (internal)

A.1 Service Tools and Supplies

You should have the following hand tools and supplies available for troubleshooting, testing, and repairing the Virtuoso LX Smart CPAP System (Virtuoso LX).

- Common Hand Tools

  Flat-blade screwdriver - small

  Phillips screwdriver - medium

- Antistatic, Electro-Static Discharge (ESD)-protected work station – minimum requirement is a grounded mat and wrist strap
- Battery, 12 Volt* – see Section A.2
- Battery Cable Adapter* (RI P/N 532209)
- Cleaning cloth
- Shielded DC Power Cord, optional (RI P/N 1001956)
- Digital Manometer – see Section A.2
- Digital Multimeter – see Section A.2
- End Cap (supplied with unit)
- Isopropyl alcohol
- Mild detergent
- O_2 Enrichment Port (RI P/N 312010)
- Pressure Tubing – 9" (RI P/N 532101)
- Regulated DC Power Supply* – see Section A.2
- Test Orifice (RI P/N 532232)
- Whisper Swivel II (RI P/N 332113)
- Torque wrench (in-lbs.)
- Watt Meter – see Section A.2

* Used for optional DC testing only.

A.2 Acceptable Test Equipment

A.2.1 Digital Manometer*

Specifications:

0 – 25 cm H_2O (or better)

±0.3 cm H_2O accuracy

±0.1 cm H_2O resolution

Acceptable Options:

- Respironics Digital Manometer (RI P/N 302227)
- Merical DP2001
- Sensym PDM 200CD
- RT-200
- Any commercially available digital manometer that meets the above specifications.

* A water column manometer may also be used.

A.2.2 Watt Meter

Specifications:

0 – 100 W

3% accuracy

1 W resolution

Acceptable Options:

- Yokogawa 2355 (digital)
- Simpson, Analog 0 – 150 W
- Extech DW 6060
- Any commercially available watt meter that meets the above specifications.

Acceptable Test Equipment (Continued)

A.2.3 Digital Multimeter

Specifications:

2.5 digit readout minimum

0.0 – 20.0 VDC

0.0 – 25.0 VAC

Acceptable Options:

- Fluke 83 or better model
- Any commercially available digital multimeter that meets the above specifications.

A.2.4 Regulated DC Power Supply (optional)

Specifications:

12 volts DC (±0.5 V) output

Regulates to 5 amps.

Acceptable Options:

- Any commercially available power supply that meets the above specifications.

A.2.5 Battery (optional, for testing only)

Specifications:

12 volts DC

Acceptable Options:

- Any commercially available battery that meets the unit's input voltage and current requirements.

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Appendix B: Schematics

B.1 Schematic Statement B-3

B.2 Main Printed Circuit Assembly (PCA) B-4

B.3 Auxiliary Memory Board B-10

B.4 Power Supply Board B-11

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Appendix B: Schematics

B.1 Schematic Statement

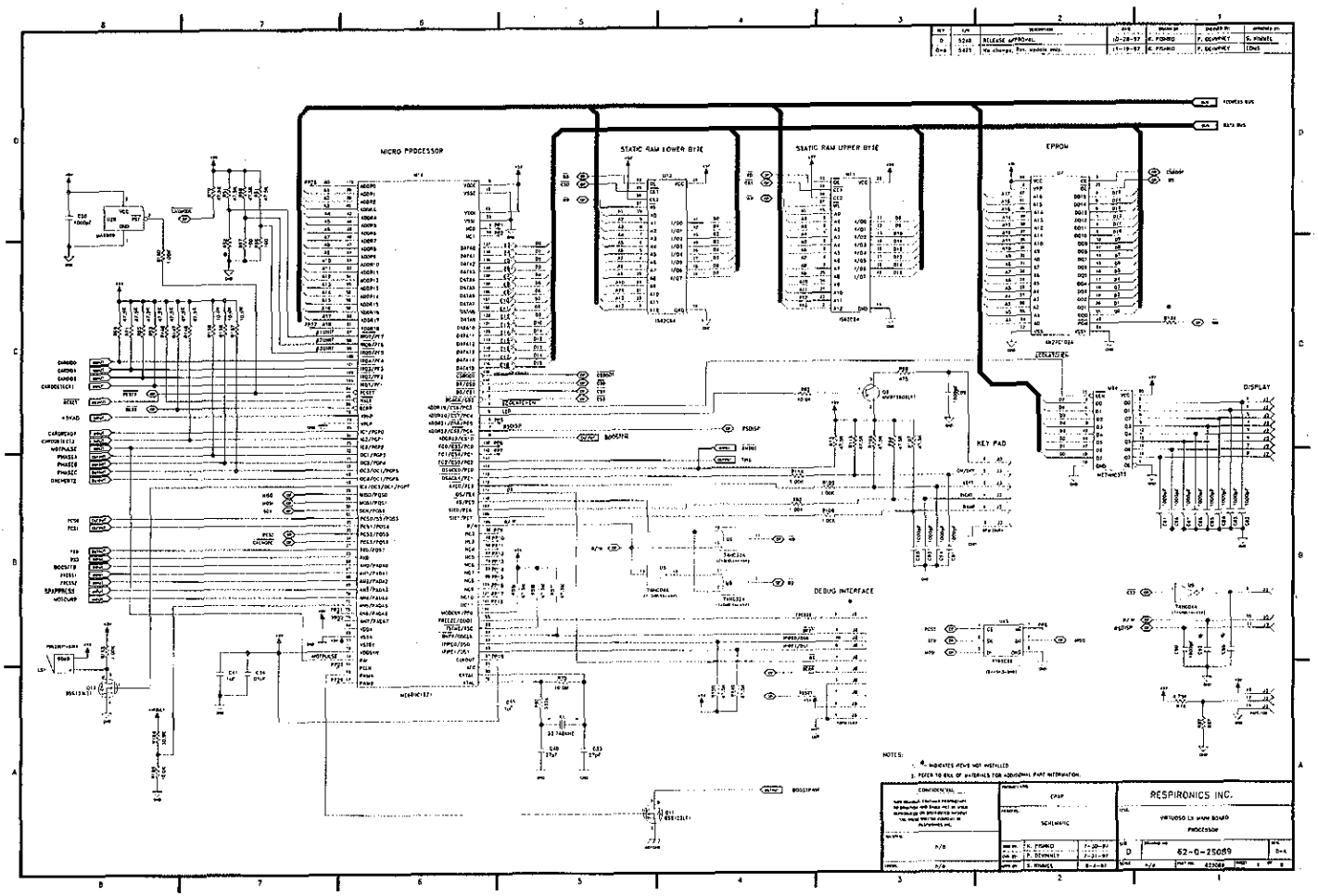
Schematics are supplied with this manual in direct support of the sale and purchase of this product.

The schematics are proprietary and confidential. Do not copy the schematics or disclose them to third parties beyond the purpose for which they are intended. Patents are pending.

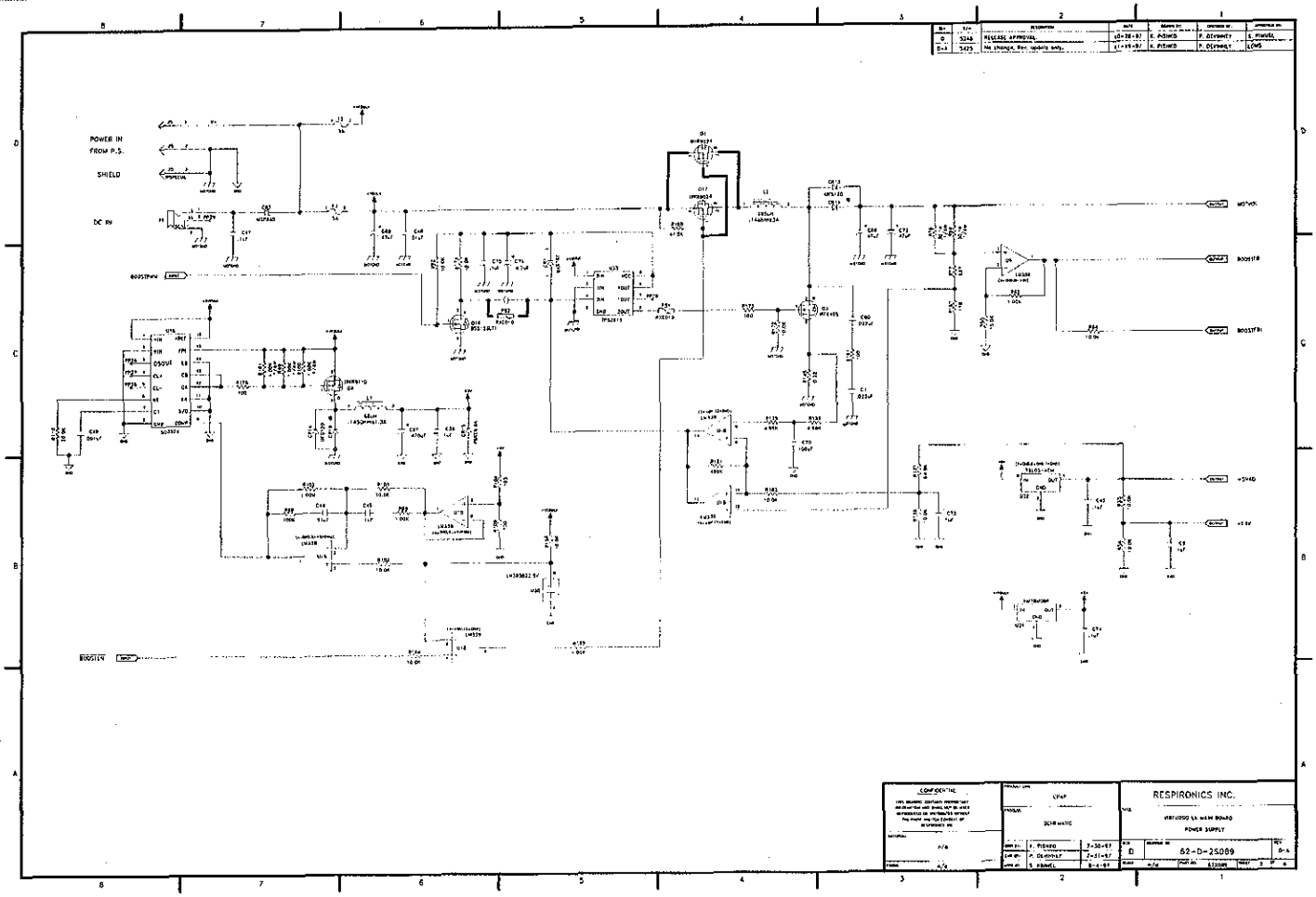
The schematics are intended to satisfy administrative requirements only. They are not intended to be used for component level testing and repair. Any changes of components could affect the reliability of the device, prohibit lot tracking of electronic components, and void warranties. Repairs and testing are supported only at the complete board level.

The schematics are of the revision level in effect at the time that this manual was last revised. New revisions may or may not be distributed in the future.

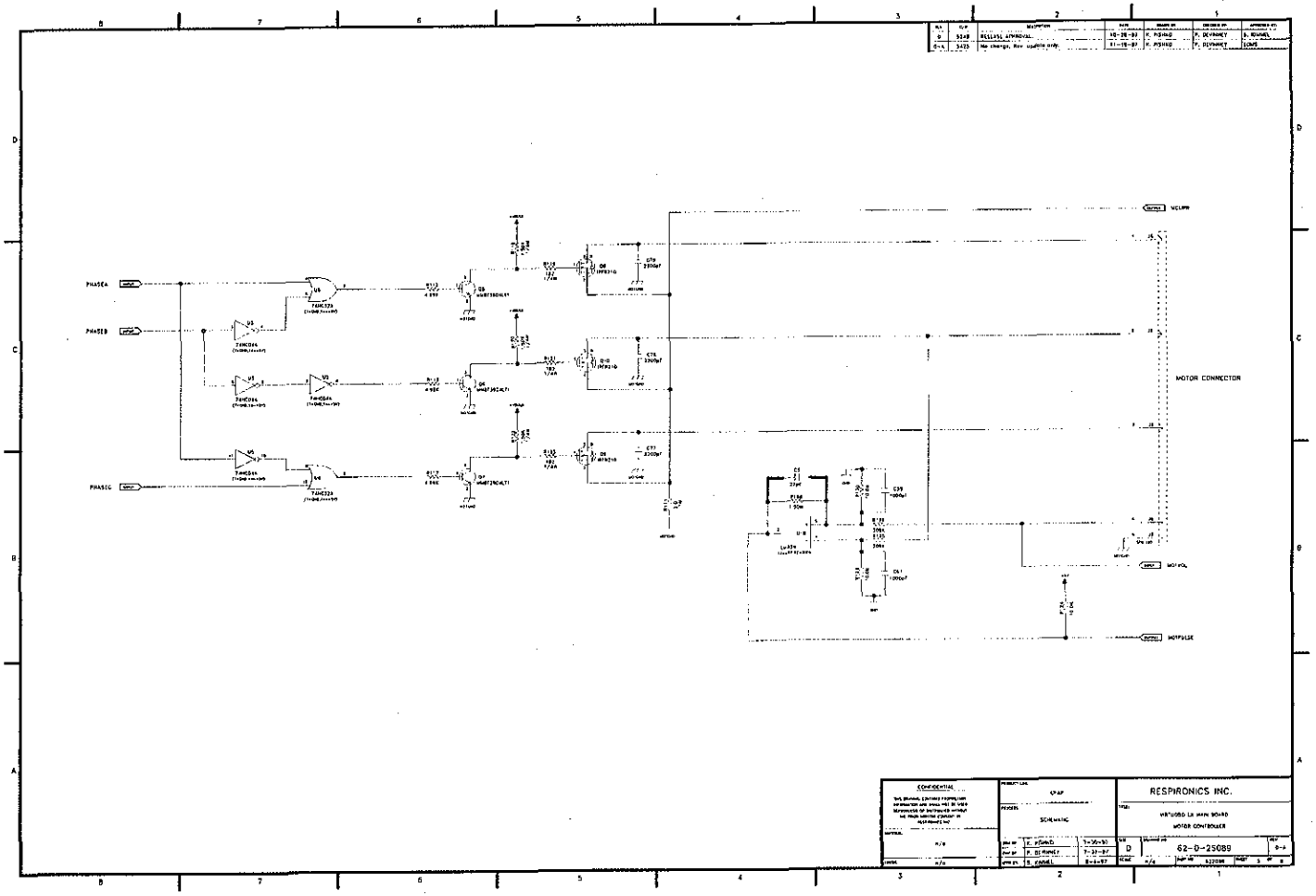
NOTE: The Power Supply PCA is a purchased item. The schematic is not available for distribution.



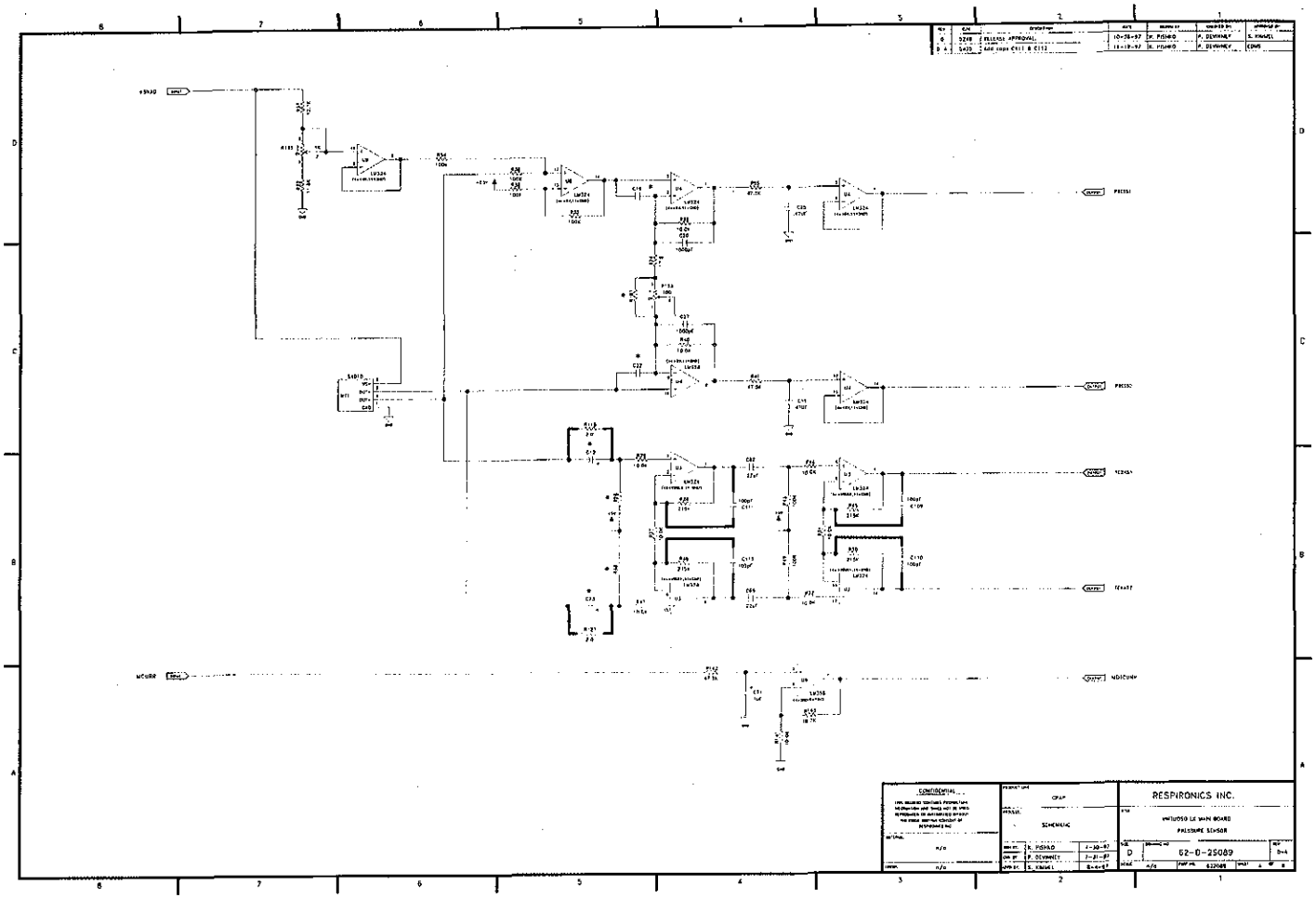
Microprocessor



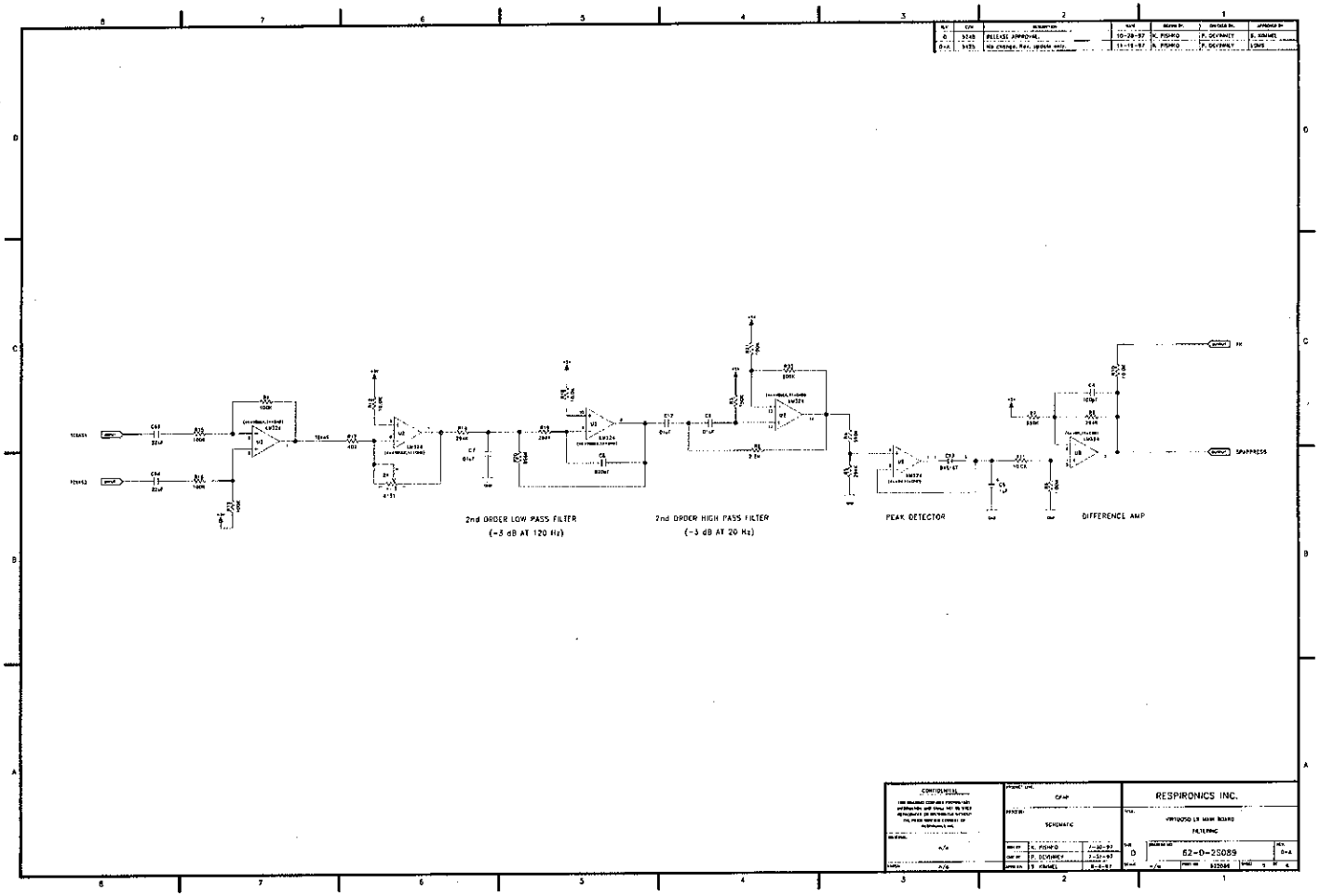
Main PCA Power Supply



Motor Controller



Pressure Sensor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